

Horticulture

ANOTHER BOTANICAL WONDER.

The following appeared a few days ago in a daily paper and as a curiosity we offer it to our horticultural friends for what it is worth. The plant is full of wonderful and eccentric plant forms, as the pitcher plants, fly catchers, orchids, parasites, etc.

All these sensational forms put together are not more truly wonderful than the thought of the ground will start at seed planted in the ground and mature and produce more of its kind. If we lived in a world where vegetable life was unknown and some stray plant should contribute one grain of corn which found a kind and receptive soil mother to assist in its germination—not the wildest of science in the history of mankind, could compare with the unexplainable beauty of it.—E.D.J.

Neither man nor the entire animal kingdom has a monopoly on coughing, or even getting red in the face in an effort to throw off foreign substances. Before there was a vertebrate on earth, while man was in process of evolution through the vegetable world, Etads Tuesday—that is what the botanists call him, while we know him as "the coughing bean"—coughed, got red in the face, and blew the dust out of his lungs.

Recently botanists have been giving special attention to this bean, and tell interesting things about it. It is a native of warm and moist tropical countries, and objects most emphatically to dust. It has an effective means of getting rid of objectionable matter. When dust settles on the breathing pores in the leaves of the plant and chokes them a gas accumulates inside, and when this reaches a certain pressure, there comes an explosion with a sound like coughing, and the dust is blown from its lodgment. And, more strange still, the plant gets red in the face through the effort.

HORTICULTURAL TALK.

Editor RURAL WORLD: It is now quite generally understood that there is little or no profit in plums in this section; excepting perhaps a few varieties. The careful grower, however, who has a particular liking for this fruit and its culture can, I think, by planting the right varieties, succeed admirably.

Good plums are relished by almost everyone, and at least one tree each of several varieties would add interest and value to every family orchard. The best place to plant plum trees is in the poultry yard. The fowls will be of great assistance in keeping down the curculio, especially if the trees are jarred very early every morning. They will also eat the fallen fruit and the insects that have caused it to fall. Several desirable varieties are now ripe on our grounds.

First of all, I will mention Simomo, it being in my opinion the most valuable of all the Japans. Tree is an upright grower, clean, thrifty, long, narrow leaves, remarkably productive and bears very early in the year. Large, pointed, purple fruit, quality not the best, but good enough. One of its strongest points is that no matter how wet the season it never rots. Ogon, now ripe, resembles an apricot in appearance and flavor. Large, productive and does not rot badly. Abundance is certainly well known. If the tree is not cut back closely or too fruit thinned, they will break to pieces with their heavy load; fruit is large and of excellent quality. As it is a very juicy fruit it rots badly in damp weather.

Burbank is large and also very productive, but not of the best quality. Berkman's, now ripe, very much like Abundance, but not so liable to rot. Wild Goose is a plum that all should have. It bears regularly, fruit large and good. Gold is one of the most remarkable plums that ever came to my notice. The limbs bend to the ground like willows with their load of fruit, and are tough enough to stand it without breaking. Fruit is very large and beautiful. Will begin to ripen in a few weeks and will hang on the tree until frost. Quality very good. Chabot, another one that I would not like to be without, will begin to ripen soon, and furnish good fruit for a long time; one of the freest from rot; bears young, abundantly and regularly. Very large, fair quality. Of course you want the Damson. You need it at home and for the market. It will surpass you may have at air profit. America and Apple fruited with us only one season. I can say that they are very promising and would recommend them for trial.

Most of the plum trees on our grounds are on peach roots, with a few exceptions. They do well on peach, and some better than on their own roots. The Damson does not do well on peach, it being one of the exceptions.

Budding.—It is a little early for dormant budding, but when there is much of it to do it is best to make an early start. The stocks work fine now after the rain, and with me, are just the right size (from the size of a lead pencil up). So have decided to begin now on peach and plums. I know of one nurseryman who usually starts his budding about Oct. 1, and several times was caught in a dry spell and found to his sorrow that his stocks would not work. Then he had to supply his customers with trees which someone else had grown, and thereby could not guarantee true to name.

THE PEACH TREE BORER.—This is perhaps the worst pest that the peach grower and nurseryman has to contend with. This insect is hard to keep in check, for the reason that it works out of sight, under the ground, and unless search is for is not discovered. It will work the whole year round if allowed to, which makes it all the more difficult to control. Lime, ashes or tobacco dust around the base of trees are good preventives.

THE FLORENCE CRAB.—If there is one crab better than all the others it is the Florence. Trees are loaded annually with fruit that can not very well be excelled in beauty and quality. In going through the orchard a few days ago, the thought came to me as I caught sight of a tree of the Florence that nothing more desirable could be selected for the lawn, and I shall surely plant one on our lawn this fall.

THE WEATHER.—We were favored on the 15th with a good, heavy shower, which was much needed. In fact, it came just what we needed. It also gave the young plants in the new strawberry beds a good chance to root. All

crops are booming, and in many cases the weeds along with them.
EDWIN H. RIEHL,
North Alton, Ill.

HORTICULTURAL EXPEDIENTS AND OBSERVATIONS.

Editor RURAL WORLD: The discussion as to whether it would pay to plant orchard on the common farm owing to the plenteousness of more fruit land is unable to stagger the sense and conviction of the growers who touch with this progressive world. What is needed is the mode of preventing the death of a per cent of the trees after bearing age. These losses are from several causes, but the first and most fundamental to consider is soil and location. One apple orchard which died badly here last year is on apparently nice sandy loam in the bottom, twenty feet to water. This land is underlain by a layer of water. This aeroseopic degree of openness is inefficient to raise water and is otherwise unhealthy to plant life.

Another lot of middle aged apple trees died badly, showing no apparent cause except being too close together—20 feet. They should have had 30 feet at least or better, two rods; some prefer 40 feet. For trees which take ten years to bear perhaps the last named distance is required, but for quick bearers like Mission Pippin, I think it too much. Where trees are planted in close rows at most two rows they will succeed some closer, but not so much as is usually thought. Fruit trees have a greater share of the fine feeding roots close to the center than hedge trees. Gophers do ruinous work cutting through the roots. I am going to plant my new trees in cages of heavy wire mesh, till I devise something better. What is two dollars expense to the loss of a tree that will bear ten bushels of fruit each year in its prime?

A Too Close Planting.—The most successful peach orchard I saw in Kingsman County was spaced but a single rod each way. They were intended to shade the entire ground. That much at full size was a benefit, but much closer would have spoiled them. Much makes the roots of trees too shallow, but that would be all right if the mulch did not dwindle away and desert them. So a thick, sandy mulch of fine gravel or clay is ideal for fruit, and for many other crops. I find that peach trees, as well as others, do best on a pretty steep north side. The rise of the sap is more gradual and they suck less in starting leaves and also set fruit buds better. This applies most in the case of the apple and cherry.

Drouth fears were quelled by the hard rains of the third week of May. The 13th, 15th and 20th of June summed up over four inches of rain here. An addition of over an inch of water fell last Saturday night. We have a good week for harvesting. The crop is in good condition and the market is good. The fruit is in good condition and the market is good. The fruit is in good condition and the market is good.

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needs only a fair market to clear a good deal of money therefrom. Even at \$c a quart his profit would be large. But let him not be too eager to make it all. Let him make it all if he can, but let him proceed about it with wisdom. Let him stand gradually, paying as he goes, and remembering that the race is not always to the swift, but oftentimes to the diligent and persistent. A hare once pitted himself against a tortoise and got beat. If the records were more complete we would doubtless find that more hares have been beaten by tortoises than we ever dreamed. KITTRELL, N. C. O. W. BLACKNALL.

EVOLUTION OF TRUCK FARMING.

Rail Refrigerator Service.

Editor RURAL WORLD: I outlined in a general way in my letter last week the transition which has occurred in the handling and marketing of perishable farm products during the past twenty years. This communication I will devote to a brief description of the incipient system and methods at present in use for transportation of perishable farm products by rail from one end of the country to the other, without alteration in quality, freshness or condition, however radical the climate changes may be to which the products are subject in transit.

Prior to the introduction of existing methods of refrigeration or cold storage transit many of our readers will remember the early and abortive efforts which were made to haul perishable products in ordinary box-cars, loaded in summer and packed with straw in winter, also wire-gauge screens to ventilate certain products. They will also remember the damage, loss and annoyance caused by the transit of perishable products in this manner. The inevitable result of this new and valuable carrying agent, which commanded the attention of merchants, producers and shippers all over the country. The introduction of their improved refrigerator car opened up new avenues of trade and stimulated the fruit-growers and truck-farmers to extend the range under cultivation. It exerted a healthy influence upon the markets of the country by the facility with which perishable packages were placed in good condition on the rails of the retailers and the advanced prices paid for them by the consumer. It saved thousands of dollars to the producer and shippers in the matter of loss by decay or rot and put a large percentage of profit in their pockets.

An ordinary refrigerator car cannot successfully carry perishable products. Therefore a brief description of an improved A. R. T. Co.'s car may be interesting, as these are unquestionably the best arranged and most perfectly equipped cars in this service.

DESCRIPTION OF CAR.—These cars are constructed upon scientific principles, equipped with all modern appliances, including air-brakes, etc. The car is the usual length and pattern. The interior is composed of cottonwood and the walls are of hard pine. Between the wall and lining is a dead-air space of three inches in thickness. This air space is divided into compartments by means of paper partitions. The entrance to the car is on the side, midway, the door being on hinges, which fit tight, narrow rubber strips being used for the exclusion of air. The ice-bunkers are placed at either end of the car, with a capacity of several tons of ice, and receive their supply through the roof, the air being excluded by means of a tightly fitting plug. There is a pan beneath each bunker for the dripping water, and below this is what is called the overflow vat, to which is attached an ingenious little tube which prevents the passage of air while the surplus water is being discharged.

A ton of ice will last during an ordinary run of 250 miles. The supply of ice is regulated according to the varieties of the temperature. In the winter there is a small percentage of ice consumed. Owing to the peculiar construction of the car, it is rendered impenetrable by frost. The roof of the car is of peculiar construction, and recently patented. It is double and carefully covered on the interior with asphalt, with a free air passage beneath it of about two inches in depth, extending the width of the car, from the bunkers to nearly the center of the car. The cold air produced in the ice-bunkers travels along the floor and drives the hot or humid air through what are known as flumes back into the bunkers, and thus a constant circulation of the cold current is maintained. The utility of this arrangement is apparent when it is stated that so certain and liable is it in operation that the company guarantees shippers against any loss by use of their service.

The car is amply protected against dust or foul volatile matter, which insures every article to go through with a fresh, clean, attractive appearance, greatly enhancing its merchantable value. METHOD OF HANDLING BUSINESS.—One of the most important features in the guarantee bill of lading, which insures shippers against loss, from whatever cause.

The A. R. T. Co. is the only company in the United States that has adopted this system, and it has been found to operate to the satisfaction of all concerned. On every line of railroad where its service is in existence, each agent or employee designated by it is constituted an inspector of all goods consigned to the charge of the company at this particular point. The most exacting and discriminating care is exercised in this inspection. By the ordinary method the carrier is not responsible for any damage that may be sustained in the transportation of this class of freight, and upon a cursory examination all packages are permitted to go through as received, provided their outward condition has a satisfactory appearance. Under the bill of lading issued by the A. R. T. Co. the company assumes absolute risk and responsibility, and in self-protection, one-tenth of the packages received are opened and critically examined by a competent inspector to ascertain if they are in good condition and properly packed. This examination proving satisfactory, they are put in the car, and the company, at once the custodian, holds itself liable for safe delivery to point of destination. In order to obviate difficulty and confusion in the reception of freight, the A. R. T. Co. has adopted an ingenious system of tickets for use by the shippers. They are denominated dray tickets. When freight is forwarded under the guarantee system, attached to the special clause of instructions to the point of destination. In order to forward the ordinary way a white ticket serves to instruct the drayman as to the disposition to be made of them.

SMALL SHIPMENTS.—The A. R. T. Co. handles freight in less than car-load lots. Under this system a tub of butter, a case of eggs or small package of any description is as carefully handled and as properly packed in the refrigerator car as would be the stowing of a full car-load, and is carried to its destination, if a through car, without disturbance. At Kansas City, St. Louis and Chicago this company has elegant and commodious cold storage facilities for receiving and trans-shipping perishable freight, also holding it pending delivery to the consignee without appreciable change of temperature.

Freight in carload lots can be shipped to any railroad station in the United States, and daily through cars are run between all principal points for broken shipments. To the dairyman, the farmer of limited means and the small fruit and truck producer, this system must necessarily prove of incalculable benefit, as it opens to them every available avenue to the best markets in all sections of the country, whether the shipment pass in transition through the torrid heat of the southern clime or the frigid weather of the north, under the guarantee system of the A. R. T. Co. it arrives at its destination in an absolutely fresh and sound condition.

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THOMAS LAWSON.

THE ONION CROP.

Editor RURAL WORLD: The subject of this crop is an extensive one, and to treat it thoroughly would consume many times the space here permissible. In this I will try to cover lightly the essential points. The soil must be rich and well supplied with plant food, having been brought up by years of manuring and high cultivation. I do not mean by this that you must necessarily spend years in preparing to begin raising onions, but to obtain the best results the land must previously have been brought up to a high standard of fertility and cultivation. Cover the ground thoroughly with good stable manure, free from too much coarse bedding. Then plow well, and be sure to plow all the trash under. Now pulverize the ground. Don't be afraid of getting it too fine, and you have some good, fine manure, free from seeds, work it in well while pulverizing. You can use hog or hen manure, wood ashes or almost any commercial fertilizer. The object of this is to give young plants an early, quick start. This is very essential to the crops. Next is the seed. Too great care cannot be taken in getting good, strong seed. Get your seed of some reliable seedsmen. Try its germinating power, and if not O. K. discard it. Onions should be drilled as soon as the ground can be fitted in the spring. In this respect it would be wise, where practical, to plow the ground in the fall previous and thoroughly surface, drain the ground, and onions cannot stand water over them. Sow them as early as the ground can be worked in the spring, drilled thinly, possibly a seed every two inches and the rows eighteen inches apart. When they get about five inches high, thin out to four or five inches apart. We sometimes transplant a few for table use. For field crops they must be drilled in the fall. When the culture it would take too much time and trouble. As fast as the weeds come hoe them down, or in field culture, use the weeder. Constantly stir the soil and keep them growing.

The early sown onion is the one to be most relied upon, especially when blight, mildew or rust affects the crop. It often does. As to the varieties, the grower must determine by the market and climate. Next, after hoeing the crop grown, comes the care of same. They should be pulled as soon after the tops die as convenient, when the ground is dry. Take at once to sheds and spread so the air can circulate through them freely. The sheds should be constructed so that the tops can be spread at nights and damp days, but have a good ventilation. Onions must not be heaped when curing. They should be left in sheds where cured until danger of frost and then removed to dry cellars until the crop is disposed of. Anyone having directions for a good crate can have same by sending me two or three stamps.

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A CORRECTION.

In the article on Solanum rostratum in the RURAL WORLD for July 16 there occurs a misprint. The description of the flower should read as follows: "The flowers are of a pure, yellow color and, in some ways, much resemble those of the potato. They are not symmetrical, however, as in the potato, the two lower lobes of the corolla being extended. The stamens are similar to those of the potato, but one of them is much larger than the others and is very much curved upwards."

HORTICULTURAL NOTES.

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I see one of your correspondents reports cherries dying from effects of last year's drought. White, pear, plums and cherries were but little affected last year by drought. The shot-hole fungus has been getting its work on the cherry trees for the past five or six years, with the result that the trees are dead or dying very fast. Out of 100 trees I had planted, this fungus had killed about one-half of them. I saw several injured the balance before I knew what was the matter. Last year ago I commenced spraying them with bordeaux mixture, used in dust form and applied with Liggett's Dry Powder Gun. Now I have about the only healthy cherry trees in this section. A. J. D. Cole Co., Mo.

ORCHARD CULTIVATION.

I have followed fruit-growing as an avocation for twenty years, writes a correspondent in a Nebraska exchange. I have grown fruit in Iowa, Northern Nebraska and Northwest Missouri, but never before did I raise such a crop of fine berries as I am doing this year. I kept the surface loose and clear of weeds. I do not cultivate over four inches deep, but no weeds are allowed to grow. I never cultivate after a rain until the surface is dry. I am not afraid of August cultivation hurting an orchard, if the cultivation was begun early in the spring and kept up, causing a continuous growth.

Many a fruit crop has been lost by neglecting the orchard until late in the season, and then plowing it. Sometimes this is done with a stirring plow. This starts a late growth, which the freezing of an ordinary winter will injure, if not kill.

FOUR FREE FRIENDS FOR FARMERS

They are four good books on cultivation and fertilization. We mail them free to any farmer who will send his name and address.

Another good friend is

POTASH

GERMAN KALI WORKS
23 Nassau St., New York

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HORTICULTURAL NOTES.

Editor RURAL WORLD: Last Friday night and Saturday morning we had a fine soaking rain. Now we employ our time in transplanting strawberry plants. Small fruits the past season were almost completely ruined by the blight. No peaches in this section. Apples about one-fourth of an average yield. Ben Davis, Winesap, M. B. Twig, Penn. Red Streak, Jonathan and Lawver are the apples that show the most fruit this year.

I see one of your correspondents reports cherries dying from effects of last year's drought. White, pear, plums and cherries were but little affected last year by drought. The shot-hole fungus has been getting its work on the cherry trees for the past five or six years, with the result that the trees are dead or dying very fast. Out of 100 trees I had planted, this fungus had killed about one-half of them. I saw several injured the balance before I knew what was the matter. Last year ago I commenced spraying them with bordeaux mixture, used in dust form and applied with Liggett's Dry Powder Gun. Now I have about the only healthy cherry trees in this section. A. J. D. Cole Co., Mo.

ORCHARD CULTIVATION.

I have followed fruit-growing as an avocation for twenty years, writes a correspondent in a Nebraska exchange. I have grown fruit in Iowa, Northern Nebraska and Northwest Missouri, but never before did I raise such a crop of fine berries as I am doing this year. I kept the surface loose and clear of weeds. I do not cultivate over four inches deep, but no weeds are allowed to grow. I never cultivate after a rain until the surface is dry. I am not afraid of August cultivation hurting an orchard, if the cultivation was begun early in the spring and kept up, causing a continuous growth.

Many a fruit crop has been lost by neglecting the orchard until late in the season, and then plowing it. Sometimes this is done with a stirring plow. This starts a late growth, which the freezing of an ordinary winter will injure, if not kill.

LOW RATE HOMESSEKERS' EXCURSIONS.

TUESDAYS August 5th and 19th, September 2nd and 16th, October 7th and 21st.

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CABBAGE WORMS

SHOT and its uses, to B. HAMMOND, Fishkill on Hudson, N. Y.

The Aplary

HONEY CROP.

Editor RURAL WORLD: Up to date (July 22) the yield of honey all over the country has been almost an entire failure. Many colonies would have perished by starvation if they had not been fed. Rain washed out pollen and nectar from the flowers, and the weather has been too cool for white clover to secrete it. Pasture for bees in Illinois is yearly becoming less. Land is too valuable to grow wild flowers, and wet places are tilled. Where the plow and reaper go there is no chance for the bee. Where an aplary is located near water courses they may yet gather fall honey. When the water recedes the land may produce a crop of Polygonum, Spanish Needles, Aster and other honey-producing flowers. Our bees were gathering to-day from sweet clover. It may rain to-morrow. Peoria, Ill. MRS. L. HARRIS.

WHAT THE BEE-KEEPER MUST KNOW.

Is a theoretical knowledge necessary in bee culture? You often meet people who tell you that the teachers of agriculture or the writers on this subject are not practical; that their theories are absolutely useless and that the men who can so finely discourse on the best manner to grow potatoes, for instance, could not raise a potato with their own hands. This is all a mistake, and although there are certainly many theorists who are not practical, most practical results are all achieved from theoretical reasonings, followed by practice, writes

Live Stock

DATE CLAIMS FOR LIVE STOCK SALES.

Claim dates for public sales will be published in this column free, when such sales are to be advertised in the RURAL WORLD. Otherwise they will be charged at regular rates.

January 25-26—Combination sale of Herefords at Chicago.

January 26-31, 1902—T. F. B. Botham, Herefords, Kansas City, Mo.

January 12-17, 1902—C. W. Armour and Jas. A. Funkhouser, Herefords, Kansas City, Mo.

February 2-26, 1902—C. A. Stannard and others, Herefords, Kansas City, Mo.

February 17, 1902—D. K. Kellerman & Son, Shorthorns, Kansas City, Mo.

February 10, 11, 12, 1902—C. A. Stannard and others, Herefords, at Oklahoma City, O. T.

February 10-11—Col. G. M. Casey, Clinton, Mo., and T. J. Wornall & Son, Liberty, Mo., at Kansas City, Mo.

February 17—D. K. Kellerman & Son, Mound City, Kan., at Kansas City.

February 18-19—J. M. Forbes & Son, at Chicago, Ill.

April 7-8, 1902—C. McGavock, Mgr., Aberdeen Angus, Kansas City, Mo.

May 6-7, 1902—Colin Cameron, Herefords, Kansas City, Mo.

August 27—Combination sale of Berkshires, at Des Moines, Iowa.

September 3-4—C. A. Stannard and others, Herefords, at Lincoln, Neb.

September 3—Combination sale of Berkshires, at Lincoln, Neb.

September 3-5—Combination sale of Herefords, Hamilton, Minn.

October 25—Bensalting Bros., Brookfield, Mo., Poland Chinas.

October 25-26—Combination Poland Chinas and Berkshires sales, Kansas City, Mo.

October 21-22—Combination sale of Herefords, Kansas City, Mo.

October 15-17—Lee White, Palmyra, Mo., Poland Chinas.

October 11—E. A. Hofstetter, Poland Chinas, at Mayville, Mo.

October 7-8—Shorthorns, J. S. McIntosh, Kansas City.

October 1—Wm. Plummer, Barclay, Kas., Poland Chinas.

October 1—J. F. Smith, Poland Chinas, at Mayville, Mo.

October 2—Roy E. Cable, Mexico, Mo.

October 31—J. C. Hall, Hallsville, Mo., and J. S. Brown, Mexico, Mo., at Centralia, Mo.

November 28-29—Shorthorns, W. P. Harned and F. M. Marshall, Kansas City.

November 20-21—North Missouri Combination Sale Association, Trenton, Mo.

November 18-19—Marshall County (Kas.) Hereford Breeders' Association, Herefords; E. E. Woodman, secretary.

November 15—A. B. Mull, Iola, Kas., Poland Chinas.

November 13—Combination sale Berkshires, at Manhattan, Kan.

November 12—Purdy Bros., Shorthorns, at Harris, Mo.

November 10—Bransetter, Robinson and Wright, Shorthorns, at Vandalla, Mo.

November 4—Chenault Todd, Fayette, Mo.

November 11—J. J. Littell, E. S. Stewart, Dr. J. F. Keith and J. H. Cottingham, at Sturgeon, Mo.

November 12—T. W. Ragdale, T. A. Bailey and Wm. R. Turner, at Shelby, Mo.

November 25—W. E. Robinson, Fairport, Mo., at South Omaha.

December 5—Combination sale, J. D. Jesse, Mgr., Brookings, Mo.

December 16—Gifford Bros., Milford, Kan., at Manhattan, Kan.

December 16—F. M. Gifford, Shorthorns, Milford, Kan.

December 10—T. H. Pugh, Herefords, Kansas City.

December 8-9—J. E. Logan and Benton Gabbert & Sons, Herefords, Kansas City, Mo.

December 4-5—Combination sale of Herefords, Chicago.

December 5—J. D. Jesse, Brownings, Mo., Poland Chinas.

POLAND CHINAS.
Aug. 13—Minnis & Hart, Edinburg, Ill.
Sept. 1, 1902—L. M. Monesse & Son, Smithton, Mo. Registered saddle and harness horses, Registered Shorthorns and Poland Chinas Hogs.
Oct. 20—E. E. Axline, at Oak Grove, Mo.
November 1—Wm. Plummer, Barclay, Kan.
November 14—Harry E. Lunt, Burden, Kan.
November 15—A. B. Mull, Iola, Kan.

BERKSHIRE SWINE.
Feb. 13—Biltmore Farm's annual sale of Berkshire brood sows, Biltmore, N. C.
Aug. 6—A. J. Lovejoy & Son, Roscoe, Ill.
Aug. 6, 1902—Berkshires; A. J. Lovejoy & Son, Roscoe, Ill.
Aug. 8, 1902—Combination sale, Kansas City, Mo.
Sept. 17, 1902—Combination State Fair sale, Indianapolis, Ind.
Oct. 1, 1902—Combination State Fair sale, Springfield, Ill.
Oct. 22-23, 1902—Combination Hog Show sale, Kansas City, Mo.
October 23, 1902—Geo. W. Jessup, Rockville, Ind., Charles F. Mills, Clerk, Springfield, Ill.
November 7—Manwaring Bros., Lawrence, Kan.
November 12—Kansas Breeders, Manhattan, Kas.
Nov. 6, 1902—Combination sale, East St. Louis, Ill.; Manager, C. H. C. Anderson, Carlinville, Ill.
Dec. 3, 1902—Combination sale Berkshires, Manager A. J. Lovejoy, Roscoe, Ill.; Clerk, Charles F. Mills, Springfield, Ill.

HOLSTEINS.
April 22, 1902—Clarence F. Hunt, second annual sale of Holsteins at Syracuse, N. Y.

NATIONAL SHORTHORN SHOWS AND SALES.
Oct. 21—J. C. Hall, Hallsville, Mo., sale at Centralia, Mo.
Nov. 11—J. J. Littell, E. S. Stewart, Dr. J. F. Keith and J. H. Cottingham, at Sturgeon, Mo.

HEREFORDS.
August 27-28—American Hereford Breeders' Association, Des Moines, Iowa.
Week of Iowa State Fair.
September 2-3—American Hereford Breeders' Association, Hamline, Minn.
Week of Minnesota State Fair.
October 21-22—American Hereford Breeders' Association, Kansas City, Mo.
Week of American Royal.
December 4-5—American Hereford Breeders' Association, Chicago, Ill. Week of International Live Stock Exhibition.
January 26-29—C. A. Jamison and others, Peoria, Ill., at Chicago.

ANGUS, GALLOWAYS, SHORTHORNS AND HEREFORDS.
September 10-12—Mid-Missouri Combination Sale Co., in connection with the

North Missouri Fair, at Chillicothe, Mo. SHORTHORNS AND CLYDEDALES. November 6—Thos. Andrews, Cambridge, Neb.

SHORTHORNS, HEREFORDS AND ABERDEEN ANGUS.
November 20-21—North Missouri Combination Sale Association, Trenton, Mo. H. J. Hughes, Secretary.

PERCHERON HORSES.
December 19—Hamm & Co., Howard, Kan., at Kansas City, Mo.

PARASITES OF DOMESTIC ANIMALS.

Oklahoma Experiment Station has issued a useful bulletin (No. 53) on the "Common Parasites of Domestic Animals," by L. L. Lewis. Every farmer, in fact, every man who keeps a domestic animal of whatever kind, is painfully aware of the presence of parasites, either on the inside or outside (frequently both) of his stock. His horses may be infested with worms, which are preying on the intestines while several groups of mange parasites are burrowing in its outer skin. Horses are also infested with lice of more than one variety, some of which bite and others which suck blood, and are easily treated. Sheep, while infested with the blood-sucking tick, can be cured after shearing time; but scab, a more serious parasite from its infectious nature, demands thorough treatment, as soon as discovered. Dipping is the usual remedy. Hogs are subject to the itch, and several kinds of worms which infest various parts of its anatomy. Most of the pests can be ward off by the constant use of salt, wood ashes and sulphur, to which they should have access at all times. The lice which the hog has externally are not so easily dealt with as would seem at first sight, as they burrow so deeply into the skin. Dipping in a 2 per cent solution of seneciole and chloro-naphtholium has effectively killed the insects. The hen flea is a troublesome parasite to humans as well as to fowls. A 2 per cent solution of creolin is effective in ridding them. All these pests make great inroads on the profits of the farmer, as the loss of the food-energy of the animals is expended in their efforts to rid themselves of these tormentors, and especially in this case with the external pests.

THE VALUE OF CLOVER HAY FOR FATTENING STEERS.

By H. J. Waters, Dean of the Agricultural College, Columbia, Mo.

Editor RURAL WORLD: With cattle on full feed it is usually considered to be a matter of comparatively small importance just what sort of roughness is supplied. Both the practical man and the teacher have assumed that essentially all the gain made in the full feeding period must come from the grain, and that the small amount of roughness eaten under such circumstances has little value except in a mechanical way to lighten the mass of food in the stomach, so that the digestive fluids may readily permeate it, and to retain the food in the digestive tract a normal length of time. In short, to facilitate the digestion of the grain and keep the animals from scouring. It is in a general way assumed that one sort of roughness will accomplish this purpose about as well as another, and in fact many feeders when using corn with the husk on, "snapped corn" give their cattle no hay, relying upon the husk and cob for the necessary roughness. Other feeders have a notion that cattle on full feed will eat too much roughness if given a very palatable hay, and that this large consumption of roughness will have a tendency to depress the grain consumption, and that slower gains will be the result. Again, the notion prevails in some quarters that the roughness consumption should be limited usually to two light feeds per week during the last 40 to 60 days of the feeding period, so as to feed off the large patch, or what the feeder calls the "hay belly."

That there is the greatest possible diversity of opinion, however, on these points among our most experienced and successful cattle feeders, is very apparent from the results of an inquiry sent by the Experiment Station to several thousand of the leading feeders in Missouri, Iowa and Illinois some time ago. The replies show these men to have had an average experience in feeding cattle of approximately 20 years each, and that they had fed and marketed a total of something over two million cattle. It is assumed, therefore, that they represent the most mature judgment of the cattle feeding industry in reply to the question as to what roughness they preferred for cattle on full feed in winter and if they allowed them to eat all they would or restricted the amount, a very great difference of opinion was shown. On many points connected with hay making, inquired about at the same time there was remarkable unanimity of opinion, showing that these men working under widely different circumstances had reached practically the same conclusions. But in the matter of the kind of roughness, the preference covered every sort from "whatever was convenient" to sheep feed, and included timothy straw, timothy hay, wheat, oats, rye, barley and flax straw, millet, sorghum, Kaffir fodder, corn fodder, clover, cowpeas, alfalfa hay, etc., or a combination of these. A comparatively few considered clover, cowpeas or alfalfa any better than timothy, and some condemned these hay on account of their laxative effect and their supposed tendency to scour the cattle. Others emphasized very strongly the importance of furnishing the best quality of roughness, and these usually preferred a variety which included clover, cowpeas, or alfalfa hay, and generally a combination of these with good corn fodder and perhaps access to a straw stack, and an occasional feed of sheep oats or oat hay, maintaining that the appetite of the steer in this direction should be carefully considered, that only the best quality should be offered, and that clover, cowpeas or alfalfa and sheep oats should be the basis of a change of hay for others for the sake of a change.

It is very clear from this diversity of opinion, either that the kind or quantity of roughness is of comparatively little consequence in full feeding, or that there is great need of some careful experimental work along this line to ascertain what value roughness has and what kind and amounts will give the best results.

The Missouri Experiment Station began investigating this subject in 1896 with yearling cattle wintered strong, and the results were so strikingly favorable to the clovers that later experi-

ments were made to include two-year-old cattle on full feed. Some of the results already obtained will throw light upon this point.

COMPARISON OF CLOVER, COWPEAS AND TIMOTHY.—In a trial with two-year-old steers fed on shelled corn from January 8th to April 16th, 1901, in which one lot of steers was allowed the timothy hay, another lot all the clover, and another all the cowpeas they would eat, the results in feed consumed and gain made were as follows:

TIMOTHY LOT.

Shelled corn eaten.....5,819 lbs.
Timothy hay eaten.....789 lbs.
Total gain per lot.....2,540 lbs.
Average daily gain per steer.....1.97 lbs.
Pounds of corn required to make a pound of gain.....11.2 lbs.

CLOVER LOT.

Shelled corn eaten.....5,570 lbs.
Clover hay eaten.....4,783 lbs.
Total gain per lot.....3,135 lbs.
Average daily gain per steer.....2.24 lbs.
Pounds of corn required to make a pound of gain.....8.6 lbs.

COWPEA LOT.

Shelled corn eaten.....5,827 lbs.
Cowpea hay eaten.....4,783 lbs.
Total gain per lot.....3,134 lbs.
Average daily gain per steer.....2.24 lbs.
Pounds of corn required to make a pound of gain.....8.6 lbs.

In other words, the lot on clover hay gained 87 of a pound per day, or 44 per cent more than the lot fed timothy hay. The results with cowpeas were practically identical with those from clover. It is needless to say that the weight, quality, and condition, the rate and amount in each lot were at the beginning of the experiment as nearly equal as it was possible to make them, and that the hay were all of good quality. These results indicate that the kind of roughness does materially affect the gain of cattle on full feed, and that it does make a decided difference whether one feeds clover or cowpea hay on the one hand or timothy on the other. It is, however, never safe to draw definite conclusions from the results of a single trial.

In another trial when cowpea hay was compared with timothy for two-year-old steers on full feed, the results for the December 18th, 1900, to April 14th, 1901, the results were as follows:

TIMOTHY LOT.

Shelled corn eaten.....3,331 lbs.
Timothy hay eaten.....9,813 lbs.
Total gain per lot.....802 lbs.
Average daily gain per steer.....1.69 lbs.
Grain required to make a pound of gain.....11.6 lbs.

COWPEA LOT.

Shelled corn eaten.....10,532 lbs.
Cowpea hay eaten.....5,862 lbs.
Total gain per lot.....1,257 lbs.
Average daily gain per steer.....2.64 lbs.
Grain required to make a pound of gain.....8.3 lbs.

In this trial the substitution of cowpea hay for timothy made an increased gain of 36 of a pound daily per steer, or practically 57 per cent.

A similar trial just closed at the Illinois Experiment Station, in which clover was compared with timothy, the results fully confirm ours, and it may be safely concluded that even with steers on full feed the kind of roughness given exerts profound influence upon the rate and economy of gain. This conclusion is fully supported by a much longer series of experiments made by us with yearling cattle on half feed, which will be referred to in a subsequent article.

(To Be Continued.)

FLORIDA FOR BEEF PRODUCTION.

The persistently recurring rumors that some of the large packing concerns of Chicago are about to establish farms in western Florida and Southern Alabama, on which to feed cattle with cassava and the Florida legumes, lend current interest to this subject. An insuperable objection against the practicability of the southern states supplying any considerable proportion of the beef and mutton consumed in the United States has always been held to be the scarcity of grass in this section, says S. Powers in "Country Gentleman." In his "Geographical Botany," De Candolle states that the grasses constituting 12 per cent, numerically, of the phanerogamic vegetation of Texas, and only 8 per cent in the United States, though of course these are only approximations. In his "Flora of the Southern United States," Chapman enumerates 199 species and varieties of grasses as indigenous to the southern states, while the rest come from the north. The fact that the southern states supplying any considerable proportion of the beef and mutton consumed in the United States has always been held to be the scarcity of grass in this section, says S. Powers in "Country Gentleman." In his "Geographical Botany," De Candolle states that the grasses constituting 12 per cent, numerically, of the phanerogamic vegetation of Texas, and only 8 per cent in the United States, though of course these are only approximations. In his "Flora of the Southern United States," Chapman enumerates 199 species and varieties of grasses as indigenous to the southern states, while the rest come from the north.

Florida is emphatically a grassy state—so far as her thin lands are capable of supporting grass. The universal distribution of the few species of wire-grass, so nearly alike that they are by farmers classified under the name of "wire-grass" and "round wire grass" and "flat wire grass"—reduces her percentage of species to an extent which does injustice to her grassy resources; while counting with more or less denseness, probably four-fifths of the surface of this immense state, the nutritiousness it takes rank fairly alongside the aboriginal prairie grasses of the western states.

This wire grass has a saurian immobility and persistency; the same tussocks doubtless stand to-day where they stood before the Seminole whoop was answered by the white man's rifle; dying each fall to a leaden-green and growing again after the annual winter "burn," vividly green and as warm as a gourd vine. It has the salamander hardness of the pines, which never perish in a fire except when, as in the Seminole era, a "rough" was allowed to accumulate for several years, when, if it is not flushed the game, the flames would sometimes leap to the tops of the trees, sixty or seventy feet high. Even this would not restrain for more than a week or a fortnight the irrepressible wire grass.

But this saurian type of vegetation is slowly being supplanted by higher forms that wait in the footsteps of civilization. Roads for miles through the pine, park-like forests; follow the curvilinear roads; follow the broader cattle trails.

Slowly the sward of the pampasul creepers over the surface, carpeting the

ground as deeply as the blue-grass of Kentucky. Tighter and tighter it draws the grip around the lingering clumps of wire-grass, which stand erect like a plume of a Seminole; but they are forced to yield in the end, and after a season or two they give out and disappear. The tough tussocks, which stood the forest fires of the Seminole and white man for 300 years, succumb in two years to the contact of civilization.

I consider the pampasul, on a fair quality of flatwoods soil, the equivalent of the blue-grass in Kentucky, except hay-making, or of the mesquite grass of Texas. It comes in voluntarily, unseeded and uncultivated, asking of man and his cattle only a little assistance in exterminating the wire grass.

On the Sierra Nevada foothills, five acres of Munroa squarrosa are not worth one acre of the wild oats and bunch grass which it exterminates. In Florida, the proportions are reversed; one acre of Paspalum compressum is worth ten acres of the wire-grass which it supplants. The pampasul at best does not grow over eight inches or a foot in height, but is so thick that a scythe cannot cut over two or three inches at a stroke, while the swath rolls up like heavy timothy.

It is so relished by cattle that they keep it depastured to the very ground, so that superficial observers regard it as worthless. In December, in north Florida, it begins to show up tawny under the action of frost; but a field of pampasul rowen would make excellent pasture through the winter, until the heavy frosts of the latter part of February. The seed is very light and scanty, and is hardly a commercial article. It can be propagated with a fair degree of speed by root-cuttings; but like June grass in the North, it quickly comes as a volunteer where culture ceases.

The same is true of Bermuda grass and Para grass; they have to be planted and a decided difference whether one feeds clover or cowpea hay on the one hand or timothy on the other. It is, however, never safe to draw definite conclusions from the results of a single trial.

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(To Be Continued.)

JUDICIOUS CORN FEEDING.

That good may proceed from evil, in some instances at least, seems to be surely shown by results noticeable from lessened corn feeding during the past year. From Ohio we learn that cholera has been wonderfully slight among hogs, whereas that disease has been the bane of swine breeders annually. From many of the reports of the corn belt comes similar reports, while calf cholera has been far less troublesome than usual. We can attribute the general health of swine and young calves to the fact that the prolonged drought made corn a scarce commodity where it was wont to be plentiful and the main standby of the farmer. The fact that the corn belt has not had a "revolving pasture." Energetic farmers will raise truck in Bermuda grass, fighting it hard, and get a good, paying crop, then pasture it for six months after the truck is harvested.

CATTLE-RAISING STIMULATED.

A cattle dealer, member of the Philadelphia Live Stock Association, tells the "Ledger" that farmers of Lancaster and Lebanon Counties now realize there is money in cattle-raising and are turning to it. They have been keeping track of market prices and are asking \$7 a hundred on the farm, some of them holding out for even higher figures. Lancaster County cattle are at their very best now. On the hoof they are bringing \$7.40 and \$7.50 a hundred, and farmers are getting the best of that price. Those figures are, from \$1.25 better than a year ago.

"It does not take much reflection to convince persons that there is something in cattle raising when prices are that much higher. The hay crop is not very good, but corn is promising. With a good corn crop there is all kinds of money in cattle for the farmer, and he realizes it, too. I think next year will see as many cattle raised in this state as ever were raised."

ST. LOUIS NATIONAL STOCK YARDS.

Market Report Furnished by Evans-Snyder-Buel Company.

CATTLE.—Receipts in native division continue light and quality common. There were no strictly choice or fancy grades on sale. Had there been any good to choice fat steers here prices would have ruled fully steady. Bulk of beef steers in native division show a decline of 2c in sympathy with the bad break in the market for the week ending in July, 1901, were \$6.00 cattle, against 33.40 the year before and \$1.00 the present year. Receipts of hogs for the week were as follows: 1900, 31,000; 1901, 122,000; 1902, 40,000. It is estimated that there is a shortage this year of over a million head in the cattle-feeding states of Illinois, Kansas, Iowa, Nebraska and Missouri from the full year of 1900. The supply will probably come from ranchers of southwest and northwest.

Against the 2,000,000 head yearlings and over of Texas, the northwest has about 1,600,000 of finer blood and smaller bone, and these will command big prices from the feeders of the middle west who will scarcely see another opportunity to buy good yearlings for a song and sell them after a twelve months' feeding at the top of a ten years' market.

CROSSING THE BUFFALO AND POLLED ANGUS.

A bill was passed by the last Congress establishing a buffalo ranch by the Government in Yellowstone Park. Charles J. Jones, popularly known as "Buffalo" Jones, has been appointed buffalo warden by the President. Mr. Jones has devoted much attention to the preservation of the American bison, and was largely instrumental in securing the appropriation during the past session of Congress for the establishment of this Government buffalo ranch in Yellowstone Park. The measure was specially recommended by the President, who is much interested in the preservation of game in this country. Mr. Jones, in speaking of his appointment, said that one of the objects in trying to save the bison is the fact that it is the only animal of the bovine kind, except, of course, the musk ox, that can live through the Western winters in the open. Throughout the entire east slope of the Rocky Mountains, from Canada to Mexico, the problem of securing domestic animals that are able to live through the severe winters of that region is a far more serious one than most people would imagine. The ordinary breeds of domestic animals cannot stand the winters, and as a result there is now a great demand for crosses between the buffalo and the Polled-Angus breed of cattle among

men (nitrogenous matter) which go to form bone, muscle, and tendon, and blood, vim and vigor. The young pig requires all of the last mentioned things from its food. There will be plenty of time later to fatten it on corn. It is necessary first to build up a strong, fully developed, healthy frame, and this is done, not by corn, but by complete rations containing all of the ingredients required in the wonderful laboratory of the stomach. Corn fed in excess from weaning time—yes, from the time the sow conceives—produces a fine, fat looking pig, but gives every opportunity for bone and stamina. For a time it may go comparatively well, but let disease strike and it succumbs at once. It is such hogs that "go down behind" and it is such hogs that does that—but lack of earthy salts in the frame and excessive adipose tissue in the body. In the corn-fed sow that brings forth but few pigs at a litter and furnishes them with but little milk on their arrival. It is over-feeding on corn that has made the Poland-China the best lard hog on earth, but somewhat deficient in bone and stamina, prolificacy and milk.

It is judicious corn feeding, and more especially the furnishing of mixed rations to swine, that gives every opportunity for exercise upon green clover, grass, rape, rye and similar green crops, that will counteract the condition which has been created in our swine by the abundance of the corn crops with which we have been blessed. More nitrogenous food, more exercise, more fresh air, more natural management; these are the key notes of success in the future management of our herds and flocks. It will bring back prepotency of the individual animal of the breed. It will improve prolificacy and provide ample milk for the increased progeny. It will improve the quality of our pork products. It cannot possibly do any harm and costs no more to follow, and best of all, it lessens causes of disease materially. It is too much corn and too little exercise that renders our hogs barren and bulls sterile; it is similar treatment and feeding that make heavy draft stallions stink with grease and prove unprofitable as breeders; it is a common cause of young heifers not coming in heat. But why lengthen the category? Enough said if we but lead readers to give the matter the consideration it deserves.—Live Stock Reporter.

TEXAS FEVER AMONG CATTLE.

Springfield, Ill., July 23.—Doctor Tiffany, State Veterinarian, returned to-day from St. Louis, where he had been investigating diseases of cattle. He found that sixty-one head of native Missouri cattle shipped from that State and sold to various parties at St. Louis, were suffering from Texas fever, and that nineteen had died.

Doctor Tiffany believes that the cars were infected and that the disease will spread. The cattle dealer is pronounced innocent of any knowledge that the cattle had fever when he shipped them.

[There is no Texas fever in Missouri. Missouri cattle are amply protected by quarantine, and the cars mentioned in above dispatch were evidently not infected properly and this criminal negligence on the part of whoever is responsible is the cause of the outbreak.—Ed.]

CATTLE-RAISING STIMULATED.

A cattle dealer, member of the Philadelphia Live Stock Association, tells the "Ledger" that farmers of Lancaster and Lebanon Counties now realize there is money in cattle-raising and are turning to it. They have been keeping track of market prices and are asking \$7 a hundred on the farm, some of them holding out for even higher figures. Lancaster County cattle are at their very best now. On the hoof they are bringing \$7.40 and \$7.50 a hundred, and farmers are getting the best of that price. Those figures are, from \$1.25 better than a year ago.

"It does not take much reflection to convince persons that there is something in cattle raising when prices are that much higher. The hay crop is not very good, but corn is promising. With a good corn crop there is all kinds of money in cattle for the farmer, and he realizes it, too. I think next year will see as many cattle raised in this state as ever were raised."

ST. LOUIS NATIONAL STOCK YARDS.

Market Report Furnished by Evans-Snyder-Buel Company.

CATTLE.—Receipts in native division continue light and quality common. There were no strictly choice or fancy grades on sale. Had there been any good to choice fat steers here prices would have ruled fully steady. Bulk of beef steers in native division show a decline of 2c in sympathy with the bad break in the market for the week ending in July, 1901, were \$6.00 cattle, against 33.40 the year before and \$1.00 the present year. Receipts of hogs for the week were as follows: 1900, 31,000; 1901, 122,000; 1902, 40,000. It is estimated that there is a shortage this year of over a million head in the cattle-feeding states of Illinois, Kansas, Iowa, Nebraska and Missouri from the full year of 1900. The supply will probably come from ranchers of southwest and northwest.

Against the 2,000,000 head yearlings and over of Texas, the northwest has about 1,600,000 of finer blood and smaller bone, and these will command big prices from the feeders of the middle west who will scarcely see another opportunity to buy good yearlings for a song and sell them after a twelve months' feeding at the top of a ten years' market.

CROSSING THE BUFFALO AND POLLED ANGUS.

A bill was passed by the last Congress establishing a buffalo ranch by the Government in Yellowstone Park. Charles J. Jones, popularly known as "Buffalo" Jones, has been appointed buffalo warden by the President. Mr. Jones has devoted much attention to the preservation of the American bison, and was largely instrumental in securing the appropriation during the past session of Congress for the establishment of this Government buffalo ranch in Yellowstone Park. The measure was specially recommended by the President, who is much interested in the preservation of game in this country. Mr. Jones, in speaking of his appointment, said that one of the objects in trying to save the bison is the fact that it is the only animal of the bovine kind, except, of course, the musk ox, that can live through the Western winters in the open. Throughout the entire east slope of the Rocky Mountains, from Canada to Mexico, the problem of securing domestic animals that are able to live through the severe winters of that region is a far more serious one than most people would imagine. The ordinary breeds of domestic animals cannot stand the winters, and as a result there is now a great demand for crosses between the buffalo and the Polled-Angus breed of cattle among

Protect your calves against Black Leg with
BLACK-LEG-INE
PASTEUR VACCINE CO., CHICAGO, NEW YORK, FT. WORTH, SAN FRANCISCO.

Sunny Slope Herefords.
150 head for sale, consisting of 50 yearling Herefords, and 50 Bulls from 8 to 24 months old. Prices Very Reasonable. Write for what you want.
C. A. STANNARD Emporia, Kansas.

SHORTHORN BULLS FOR SALE.
Of desirable age. All sired by the Scotch Landrace W. A. Harris bred bull LAVENDER DOB. NIT 12560 and out of Pearl Dasher, Rose of Sharon, Young Mary and Nellie Bly Cows. Lavender Dorrit for sale or exchange for Scotch bull of equal merit. Sold for no fault. Call on or address:
E. T. LETTON & SON, Walker, Mo.

ST. LOUIS NATIONAL STOCK YARDS.
THE LIVE STOCK MARKET OF ST. LOUIS.
Located at East St. Louis, directly opposite the city of St. Louis. Shippers should see that their stock is billed directly to the
National - Stock - Yards.
G. G. KNOX, V. Pres. C. T. JONES, Gen. Mgr. L. W. KRAKE, Asst. Gen. Mgr.

RAVENSWOOD HERD OF SHORTHORNS.
LAVENDER VISCOUNT 124755, Champion Bull Two Years in Succession. Winner of the Armour Trophy for best bull at the Kansas City show of 1900 and grand champion over all at same show, also grand champion over all at the Chicago International of 1901, heads here handled by the Chicago Bull Royal Hampton by Henry Hampton, St. Louis, Mo. Bulls and heifers for sale. E. LEONARD & SON, Bull Air, Cooper County, Mo. Ed. Patterson, Manager. Telegraph and shipping station, Bunceton, Mo. Missouri Pacific Ry.

Registered Shorthorn Cattle
AND POLAND-CHINA HOGS,
Bred and For Sale by
H. A. BARBER, WINDSOR, MO.
20 BULLS—25 YOUNG COWS
With calves at foot, good colors, Scotch-Topped Bates, will be sold right if taken soon.
S. W. ROBERTS, PLEASANT GREEN, MO.

Heretics and yearlings sold at \$2.50 per 100 pounds, with the bulk at \$4.00. Bulls, full range, \$2.00 per 100; bulk of sales, \$3.00 per 100. Stocker bulls sold at \$2.50 per 100; the bulk at \$3.00 per 100. During the week the milkers sold at a full range of \$19.50 to \$20.00 per cow and calf; the bulk of sales being at \$20.00 per 100.

SOUTHERN CATTLE.—Receipts this week the heaviest run of the season. Quality of cattle this week has shown some improvement. Monday, market was 10c to 15c lower; Tuesday, steady to 10c lower; Wednesday, under light receipts, steady to strong at decline noted; Thursday, under extremely heavy receipts, it was fully 15c lower, and the market for the week closes anywhere from 25c to 40c lower on steers than last week, the heaviest decline being on the heavy weight. Receipts of cows liberal, and values 10c to 20c lower for the week. Receipts of bulls light, but prices about 10c lower. Receipts of calves liberal; prices strong on best, steady on all others. During the week Texas and Indiana yearlings averaged 57c to 112c pounds sold at a full range of \$2.50 to \$3.00. Most of them going at \$2.50 to \$3.00. Cows and heifers brought \$2.10 to \$3.00; bulls, \$2.00 to \$3.00; steers and oxen, \$2.00 to \$3.00; calves, \$2.00 to \$3.00. The bulk of them going at \$2.50 per 100.

HOGS.—Receipts for part of week liberal, and a decline of 25c to 40c was established. However, under lighter offerings, Thursday and Friday values reacted about 10c. Best clearance of the week was made Friday at following values: Butchers and select hedges, \$7.75 to \$8.00; light mixed, \$7.40 to \$7.75; heavy pigs, \$7.00 to \$7.40; light pigs, \$7.00 to \$7.00; rough hedges, \$7.00 to \$7.00.

SHEEP.—Receipts for the week moderate, and prices on lambs ruled steady, while sheep sold 15c to 20c higher. We quote following values: Best sheep, \$4.50 to \$4.75; best lambs, \$6.50 to \$6.75; best bucks, \$2.25 to \$2.50; stockers, \$2.50 to \$3.00. Monday, July 29, 19

The Markets

WHEAT—No. 2 red, 64c; No. 3 red, 63c; No. 4, 62c; rejected, 60c; No. 2 hard, 61c; No. 3 hard, 60c; No. 4 hard, 59c; No. 2 mixed, 58c; No. 3 mixed, 57c; No. 4 mixed, 56c; No. 2 white, 55c; No. 3 white, 54c; No. 4 white, 53c.

CORN—No. 2, 52c; No. 3, 51c; No. 4, 50c; No. 2 yellow, 51c; No. 3 yellow, 50c; No. 4 yellow, 49c.

OATS—By sample, delivered: No. 2, 33c; No. 3, 32c; No. 4, 31c; No. 2 white, 34c; No. 3 white, 33c; No. 4 white, 32c; No. 2 mixed, 31c; No. 3 mixed, 30c; No. 4 mixed, 29c; No. 2 white, 31c; No. 3 white, 30c; No. 4 white, 29c.

RYE—No. 2, 45c; No. 3, 44c; No. 4, 43c; No. 2 white, 46c; No. 3 white, 45c; No. 4 white, 44c.

BARLEY—At 60c.

FLAXSEED—\$1.41 per bu.

BRAN—No. 2, 11c; No. 3, 10c; No. 4, 9c; No. 2 white, 12c; No. 3 white, 11c; No. 4 white, 10c.

WHEAT FLOUR—\$3.10 sks., \$3.30 bbls.

CORNMEAL—\$2.15; pearl, grits and hominy, \$2.50.

HAY—Timothy, \$15.00 for choice; \$14.00 for No. 1; \$13.00 for No. 2; new timothy, \$12.00 for choice; \$11.00 for No. 1; \$10.00 for No. 2; prairie, new, choice, \$9.00; No. 1, \$8.50; No. 2, \$8.00.

STRAW—Wheat, \$4.00; rye, \$3.50.

COTTON—Local spot quotations: Ordinary, 7 1/2c; good ordinary, 8 1/2c; low middling, 9c; middling, 9 1/2c; good middling, 9 3/4c; middling, 10c; high, 10 1/2c.

WOOL—Missouri and Illinois: Choice, 18c; good, 17c; fair, 16c; low, 15c; No. 1, 14c; No. 2, 13c; No. 3, 12c; No. 4, 11c; No. 5, 10c; No. 6, 9c; No. 7, 8c; No. 8, 7c; No. 9, 6c; No. 10, 5c; No. 11, 4c; No. 12, 3c; No. 13, 2c; No. 14, 1c; No. 15, 1/2c; No. 16, 1/4c; No. 17, 1/8c; No. 18, 1/16c; No. 19, 1/32c; No. 20, 1/64c; No. 21, 1/128c; No. 22, 1/256c; No. 23, 1/512c; No. 24, 1/1024c; No. 25, 1/2048c; No. 26, 1/4096c; No. 27, 1/8192c; No. 28, 1/16384c; No. 29, 1/32768c; No. 30, 1/65536c; No. 31, 1/131072c; No. 32, 1/262144c; No. 33, 1/524288c; No. 34, 1/1048576c; No. 35, 1/2097152c; No. 36, 1/4194304c; No. 37, 1/8388608c; No. 38, 1/16777216c; No. 39, 1/33554432c; No. 40, 1/67108864c; No. 41, 1/134217728c; No. 42, 1/268435456c; No. 43, 1/536870912c; No. 44, 1/1073741824c; No. 45, 1/2147483648c; No. 46, 1/4294967296c; No. 47, 1/8589934592c; No. 48, 1/17179869184c; No. 49, 1/34359738368c; No. 50, 1/68719476736c; No. 51, 1/137438953472c; No. 52, 1/274877906944c; No. 53, 1/549755813888c; No. 54, 1/1099511627776c; 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